

FIFI-LS Spectral Resolution

SOFIA

Wavelength range: 42 - 210 μm

Two bands:

Short (**S**): 42 - 110 μm

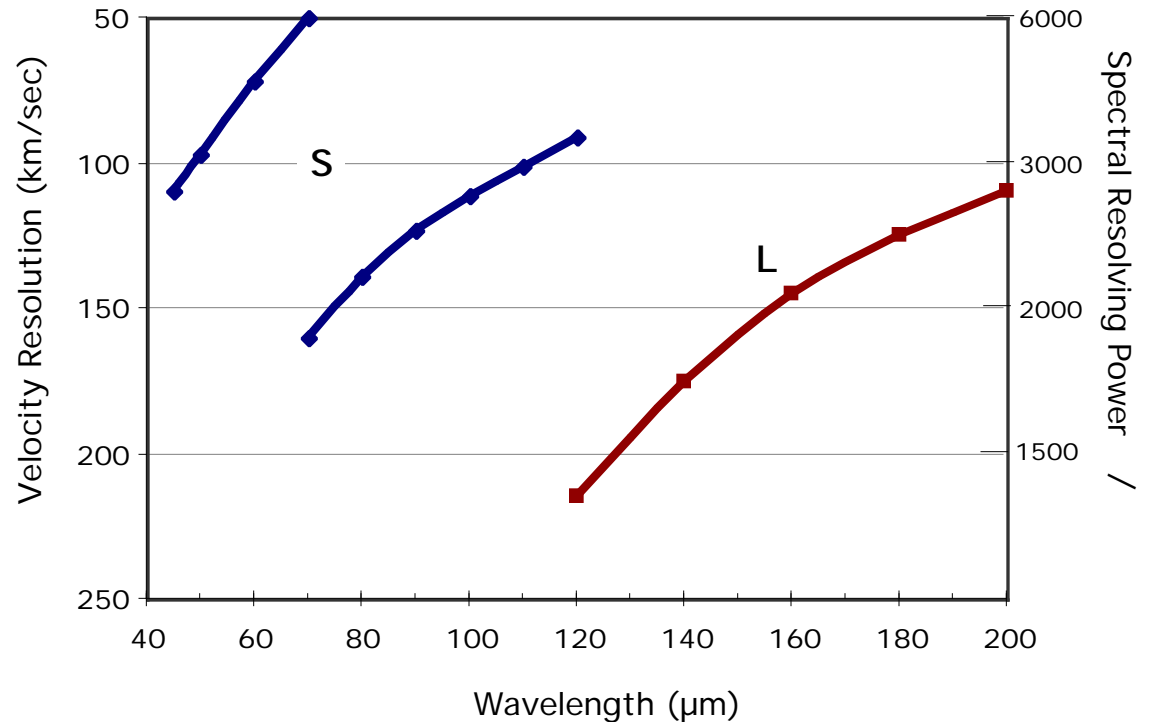
Long (**L**): 110 - 210 μm

The spectral resolution plotted corresponds to the FWHM of the instrument line spread function for a monochromatic line from a point source.

Wavelength changes
require about 2 minutes.

Wavelength setting accuracy
corresponds to 20 km/s

Error in velocity determination
20 km/s for unresolved lines



Free spectral range :
1500 - 3000 km/s in both bands



MDLF is the “minimum detectable line flux”, 4 in 15 minutes (900s).

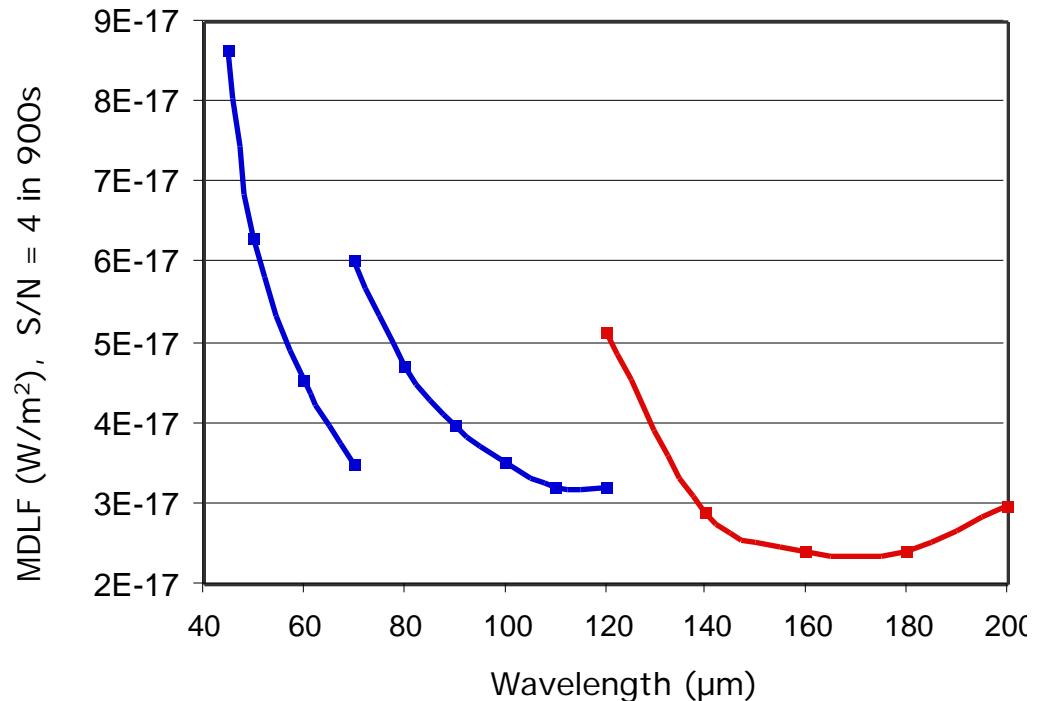
MDLF is plotted for a monochromatic line from a point source, for each of the two spectral bands, **S** and **L**.

MDLF scales roughly as $(S/N) / \sqrt{t}$
where t = net integration time

Minimum detectable continuum flux
MDCF (4 , 15 minutes):

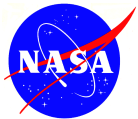
- ~ 0.9 -1.6 Jy for S,
- ~ 0.8 - 2.1 Jy for L

Calibration and setup overhead is very roughly 20%.



Line measurements in bright continuum sources may take longer to reach the same (S/N).

Atmospheric transmission may preclude measurements at some wavelengths and reduce sensitivity at others. Further details for particular wavelengths of interest are available from the SI team; see contact information on the title page.



FIFI-LS Angular Resolution

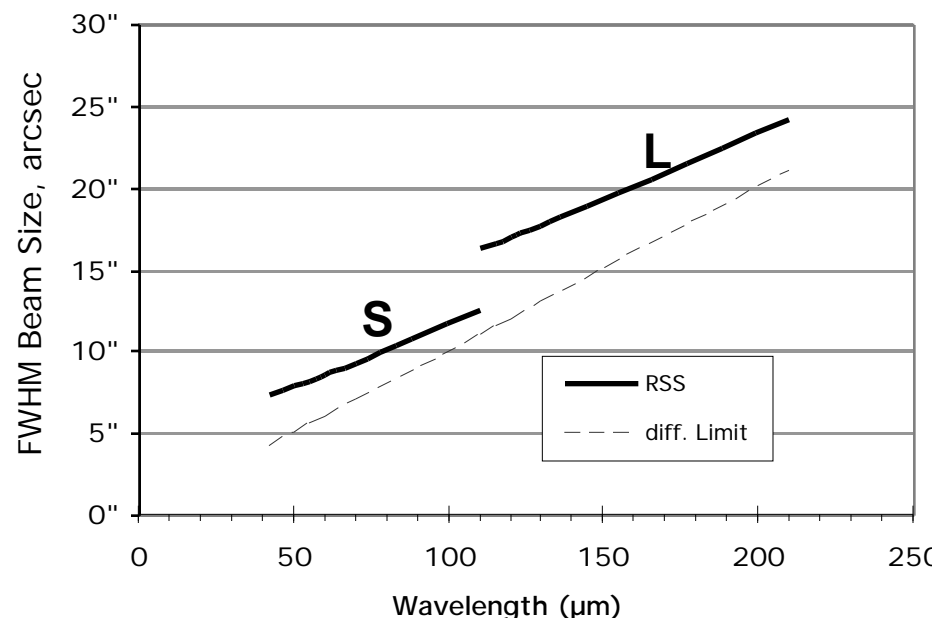
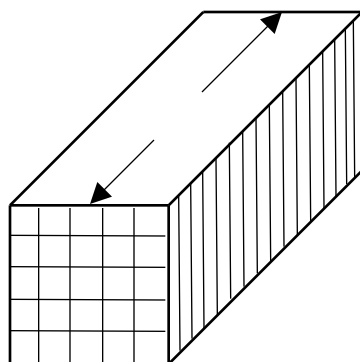
SOFIA

Beam size shown is a predicted FWHM image size for nominal operating conditions, calculated as the root sum square (RSS) of the pixel size and the diffraction-limited telescope image size.

Format: 5 x 5 spatial and 16 spectral channels deep in direction

S: 6" x 6" pixel, 30" x 30" FOV

L: 12" x 12" pixel, 60" x 60" FOV



Final images from FIFI-LS with angular resolution equal to the SOFIA telescope diffraction limit should be possible with use of appropriate observing techniques and post-flight analysis.

SOFIA and all first light focal-plane instruments are now in development. All sensitivity and resolution data are preliminary, and based on anticipated performance of the observatory and the instruments. Actual performance of the SOFIA telescope and instrument combination will be established after flight operations begin. Telescope performance is expected to be upgraded during the first two years, and instrument performance may be upgraded, or additional modes or capabilities may be added.

PERFORMANCE ESTIMATES GIVEN HERE ARE BASED ON DATA SUPPLIED BY THE INSTRUMENT TEAMS.

A POINT OF CONTACT FOR EACH INSTRUMENT IS PROVIDED.